Records of All-Sky Camera Photographs at Syowa Station, Antarctica in 1981

National Institute of Polar Research

This report gives information on all-sky photograph data obtained at Syowa Station in 1981. Copies of the data are available to users on request. The request should be addressed to:

Division of Data Collection and Processing
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Tokyo 173, Japan.

1. Location of observatory

Station name	Geographic		Geomagnetic		Height
	Latitude	Longitude	Latitude	Longitude	15 m above sea level
Syowa	69°00'S	39°35'E	-70.0°	79.4°	

2. Observer and compiler

Mr. Ryouki SAKAI: National Institute of Polar Research

3. Instrumentation

The 22nd Japanese Antarctic Research Expedition introduced a new type of All-Sky Camera (ASC-2) in addition to the ASC-1. This new one was equipped with a digital clock while the previous one used an analog clock. In both ASCs the 35 mm cine-pulse camera with a fish-eye lens of f/1.4 was used. The observation was carried out during clear nights between March 3 and October 5, 1981. In general, six photographs were taken every minute. The exposure time of each photograph

was 7 seconds. During very low auroral activities, photographing rate was reduced to two frames per minute. The film used was Kodak 35 mm 4-X with the ASA number of 500.

4. Observation

The date and hour of the observations are given in Fig. 1 and Table 1. Symbols in Fig. 1 are as follows:

Dark area: All-sky camera was operated.

Blank area: Not operated due to bad weather conditions.

Cross area: Not operated due to instrument malfunction.

The underlines for the three-hourly K-indices in Table 1 represent the period in which the all-sky camera was operated. The clock in the all-sky photographs indicates UT (UT = LT - 3 hours).

The classification of the K-indices at Syowa Station is as follows:

K-index:				
	0	0	<	25 nT
	1	25	<	50 nT
	2	50	<	100 nT
	3	100	<	200 nT
	4	200	<	350 nT
	5	350	<	600 nT
	6	600	<	1000 nT
	7	1000	<	1660 nT
	8	1660	<	2500 nT
	9	more than 2500 nT		

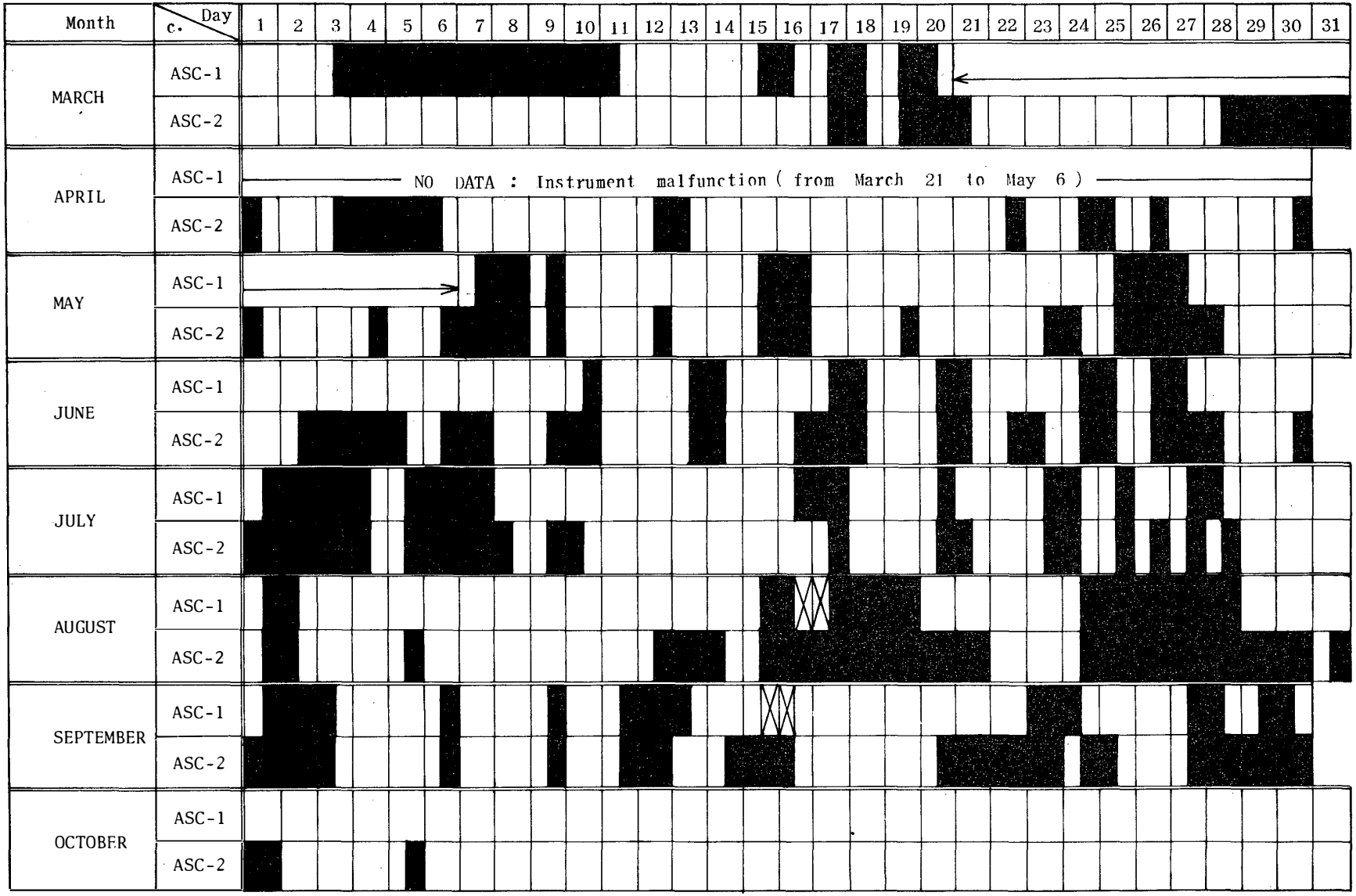


Fig. 1. Days of observation by the 35 mm all-sky cameras in 1981.

Table 1. The records of observation time of the 35 mm all-sky cameras (ASC-1 and ASC-2) at Syowa Station in 1981.

Date	ASC-1 Universal Time			ASC-2 Universal Time			K-Index	
	h m s	h m s	h m s	h m s	h m s	h m s		
Mar. 3			18 00 00				4210	1154
4	-00 58 57		18 03 00				3453	2112
5	-01 00 57		18 00 00				2666	6575
6	-01 01 57		18 01 00				4332	2121
7	-00 57 57		18 00 00				2233	3363
8	-00 51 57		18 00 00				4332	2210
9	-00 57 37		18 00 00				1011	1001
10	-00 59 37		17 00 00				2222	2111
11	-01 58 37						2211	2100
15			19 00 00				3542	2434
16	-01 55 57						4332	2235
17			17 00 00			17 02 00	6421	2324
18	-01 56 57			-01 56 57			4442	3333
19			17 04 00			17 00 00	3211	0353

Date	A S C – 1	A S C – 2	K-Index
	Universal Time	Universal Time	
	h m s h m s h m s	h m s h m s h m s	
Mar. 20	-01 57 37	-01 59 37 21 55 00	1322 2201
21		-01 59 37	0010 0034
28		16 20 00	4321 1235
29		-02 59 37 17 50 00	5553 3333
30		-02 59 37 16 31 00	4331 2266
31		-02 59 37 16 00 00	6532 2344
Apr. 1		-02 59 37	4433 2354
3		22 05 00	5521 1335
4		-02 59 37 16 00 00	4411 1122
5		-02 59 37 16 00 00	2000 0022
6		-02 59 37	3331 0011
12		20 00 00	6643 5564
13		-02 59 37	6664 4335
22		17 40 00 -19 53 52	6563 2345
24		18 31 00	2543 3455
25		-03 49 37	4532 2335
26		14 35 00 -16 44 37	5555 4356

Date	A S C − 1			A S C − 2			K-Index
	Universal Time			Universal Time			
	h m s	h m s	h m s	h m s	h m s	h m s	
Apr. 30						21 16 00	3111 0021
May 1				-03 54 37			2132 1244
4					14 11 00	-19 52 37	0000 0000
6						14 15 00	0210 0100
7			15 05 00	-03 59 37		14 40 00	0210 0010
8	-03 59 37	17 01 00	-21 36 37	-03 59 37	17 00 00	-21 38 37	1211 0112
9		13 45 00	-19 37 37		13 50 00	-19 36 37	4674 1225
12					14 00 00	-21 24 37	3332 1355
15			15 10 00			15 10 00	6664 2456
16	-03 00 37	19 02 00	-20 32 37	-03 59 37	19 00 00	-20 30 37	5663 3455
19					14 10 00	-18 35 37	2453 4225
23						14 00 00	0343 2235
24				-04 59 37	14 01 00	-19 24 37	5553 2244
25			13 01 00			16 02 00	3554 2356
26	-04 53 57		13 15 00	-04 59 52		13 01 00	3332 0102
27	-02 59 57			-04 59 37		18 00 00	2200 0024
28				-04 45 37			5511 2112

Date	ASC – 1			ASC – 2			K-Index	
	Universal Time			Universal Time				
	h m s	h m s	h m s	h m s	h m s	h m s		
June 2						17 20 00	3012	1110
3				-04 59 37		13 00 00	1131	3356
4				-04 59 37		13 10 00	3211	0000
5				-05 59 37			4110	1004
6						13 15 00	3101	2325
7				-04 59 52	13 16 00	-21 47 37	3564	3355
9						18 00 00	4110	0000
10		13 32 00	-17 12 37	-05 45 37	13 20 00	-17 13 37	0001	0100
13			17 33 00			17 35 00	1010	1110
14	-04 58 37			-05 59 37			0000	0001
16						13 00 00	5521	1445
17			15 37 00	-05 59 37		15 30 00	4542	1011
18	-05 57 37			-05 59 37			4431	1124
20			12 30 00			13 04 00	4323	1112
21	-05 58 37			-05 59 37			3330	0000
22						13 00 00	0000	0122
23				-05 59 37			2310	0000

Date	A S C – 1 Universal Time			A S C – 2 Universal Time			K-Index	
	h m s	h m s	h m s	h m s	h m s	h m s		
June 24			13 05 00			13 09 00	0011	2142
25	-05 55 37			-05 59 37			2212	3223
26			20 34 00			21 00 00	3334	3214
27	-05 56 37			-05 59 37		15 40 00	4342	1133
28				-05 59 37			4343	1232
30						14 00 00	4210	0123
July 1		13 52 00 -17 49 57	20 12 00	-05 59 37		13 33 00	4432	2234
2	-02 58 57		19 50 00	-02 59 57		13 01 00	3453	3235
3	-04 58 57		20 31 00	-04 59 37		20 10 00	3111	1136
4	-03 57 37			-04 59 37			3321	0215
5			16 05 00			13 50 00	2322	2233
6	-03 03 37		14 00 00	-02 59 37		19 01 00	5543	2432
7	-04 58 57	16 10 00	-20 59 37	-04 58 57		16 29 00	4342	2213
8				-02 02 37			3332	2002
9						15 30 00	4321	1132
10				-04 46 37			3120	0001
16			14 43 00				4201	0002

Date		A S C — 1 Universal Time			A S C — 2 Universal Time			K-Index	
		h m s	h m s	h m s	h m s	h m s	h m s		
July	17	-05 59 37	14 00 00	-22 49 57		14 00 00	-22 51 57	4134	3046
	20		14 02 00	-19 15 57			14 00 00	5311	3111
	21				-03 59 37			3311	0002
	23			13 33 00			13 30 00	4353	4645
	24	-00 20 37			-03 59 37			4211	1215
	25		17 25 00	-22 18 57		17 15 00	-19 19 57	5774	7667
	26					17 35 00	-19 19 57	7764	3435
	27			15 10 00		15 01 00	-22 59 57	6664	3324
	28	-02 00 57				14 02 00	-20 59 57	3332	2212
Aug.	1			19 36 00			19 29 00	4453	1244
	2	-03 55 57			-04 59 57			3211	1215
	5					15 00 00	-20 39 57	1663	2334
	12						15 01 00	4430	0115
	13				-04 59 37		15 00 00	4331	0013
	14				-04 59 37			5311	2113
	15			18 15 00		18 14 00 -22 13 37	23 00 00	2320	1045
	16	-03 55 37			-03 59 37		14 46 00	3311	0103

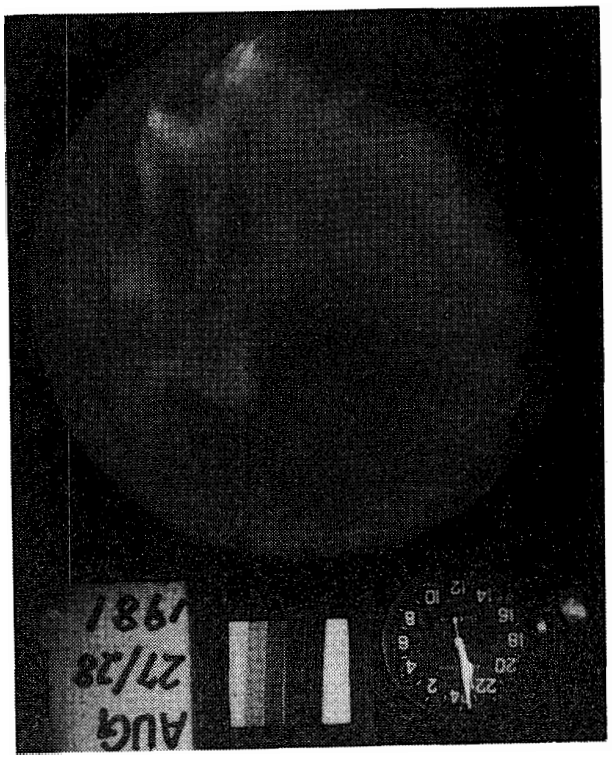
Date		A S C — 1			A S C — 2			K-Index	
		Universal Time			Universal Time				
		h m s	h m s	h m s	h m s	h m s	h m s		
Aug.	17			16 53 00	-03 59 37		14 46 00	4333	1224
	18	-03 40 37		16 19 00	-03 59 37		14 46 00	5442	3334
	19	-03 55 57	16 44 00	-21 13 37	-03 59 57		15 04 00	4522	2223
	20				-03 59 57		15 00 00	5520	0122
	21				-03 59 37	15 00 00	-20 03 37	3232	2242
	24			15 04 00			15 03 00	4532	2466
	25	-03 59 57		15 09 00	-03 53 57		16 48 00	6233	0334
			15 03 00						
	26	-03 59 37	-16 06 37	20 24 00	-03 59 37		15 01 00	1110	1022
	27	-02 58 57		19 30 00	-02 59 57		19 13 00	3212	2334
	28	-02 59 57	16 10 00	-18 55 57	-02 59 57		15 30 00	4443	1425
	29				-02 43 57		15 30 00	4333	2222
	30				-02 59 57	15 30 00	-23 10 57	5632	2214
	31						15 30 00	3531	0100
Sep.	1			23 44 00	-02 59 37		15 30 00	0001	0003
	2	-02 50 37		20 29 00	-02 59 37		15 34 00	4452	2432
	3	-02 56 37			-02 59 37			2210	0004
	6		16 00 00	-19 44 37		16 03 00	-19 45 37	3321	0003

Date	A S C – 1			A S C – 2			K-Index
	Universal Time			Universal Time			
	h m s	h m s	h m s	h m s	h m s	h m s	
Sep. 9		16 10 00	-19 16 37		16 00 00	-19 17 37	5532 2133
11			16 20 00			16 12 00	5544 2224
12	-02 25 37		16 10 00	-02 29 37	16 00 00	-22 11 37	3421 2344
13	-02 11 37						4342 1304
14						16 55 00	1011 1124
15				-02 29 37		16 30 00	2232 1332
16				-01 59 37			4430 1023
20						17 00 00	4322 0025
21				-01 59 57		17 00 00	4001 1034
22				-01 59 57		17 00 00	4551 0124
23	00 00 00	-01 55 37	19 55 00	-01 59 37	20 00 00	-21 59 57	3310 1001
24	-00 58 37					17 00 00	0121 1223
25				-00 18 57			4322 2212
27			17 27 00			17 32 00	4552 1343
28	-00 57 37			-00 59 57		20 12 00	3311 0103
29			21 23 00	-00 57 57		21 12 00	2321 1234
30	-00 57 37			-00 59 57		18 50 00	4432 2235

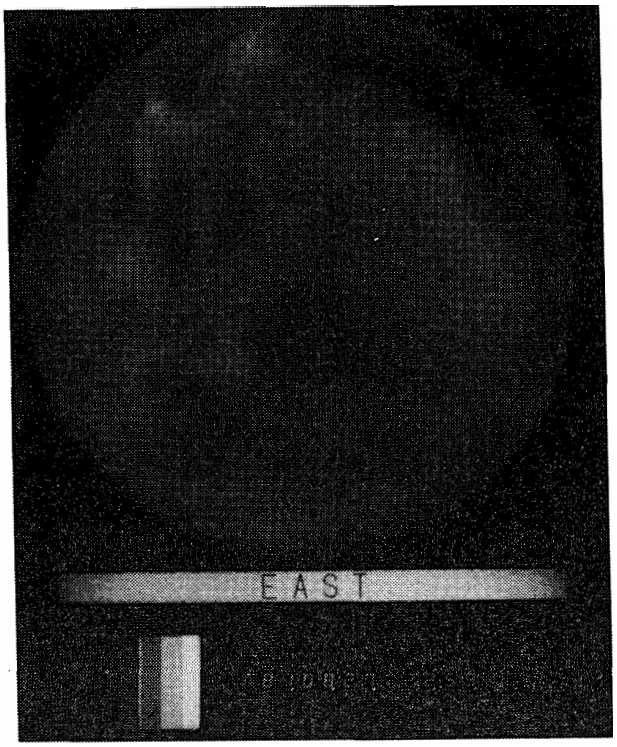
Date	A S C – 1	A S C – 2	K-Index
	Universal Time	Universal Time	
	h m s h m s h m s	h m s h m s h m s	
Oct. 1		-00 29 57 18 18 00 -23 59 57	4321 1114
5		19 08 00 -23 59 37	5221 1003

Appendix

Examples of photographs taken by ASC-1 and ASC-2.



ASC-1



ASC-2